

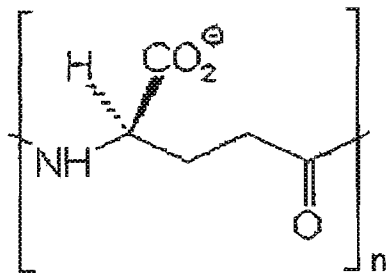
133.

POLY γ -D-GLUTAMIC ACID AS A TEMPLATE FOR FUNCTIONALIZED

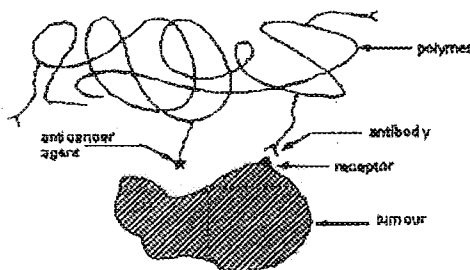
WATER-SOLUBLE BIOMATERIALS. Emmanuel, J.-P. F. Prodhomme and T.D.H. Bugg. Chemistry dept, Warwick University, Coventry, CV4 7AL, United Kingdom, msrpx@warwick.ac.uk

Polymeric materials can provide a very useful template for the delivery of biologically active small molecules, provided that the polymer can be efficiently functionalised, giving a high local concentration of attached ligands.

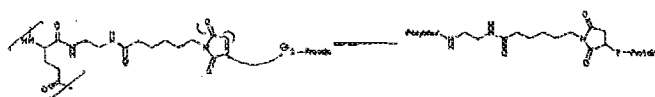
Poly γ -D-glutamic acid is an unusual γ -linked polypeptide of high molecular weight (150-200kDa) isolated from *Bacillus licheniformis* and offers several advantages for such studies. It is a high molecular weight, water-soluble polymer, its α -carboxylate sidechains can be covalently modified in aqueous solution, its γ -linked D-amino acid backbone is resistant to mammalian proteases.



The immobilisation of protein ligands on the polymer can lead to several applications including the immobilisation of tumour-specific antibodies which bind to multimeric receptors on tumour cell surface and the co-immobilisation of tumour-specific antibodies with anticancer agents.



Some linkers were developed to be attached via their free amino group to the polymer followed by an addition of the given protein on the conjugate via a free thiol.



134.

PURIFICATION AND PARTIAL CHARACTERIZATION OF

2-(2'-HYDROXYPHENYL)BENZENESULFINATE DESULFINASE. Rene C. Rodriguez¹, Dawn S. Schneider¹, and Linette M. Watkins². (1) Department of Chemistry, Southwest Texas State U, 601 University Dr, San Marcos, TX 78666, rr43448@swt.edu, (2) Department of Chemistry and Waste Minimization and Management Research Center, Southwest Texas State U, 601 University Dr, San Marcos, TX 78666

Dibenzothiophene is the model organosulfur compound used to study the biocatalytic removal of sulfur from petroleum and coal products. The enzyme 2-(2'-hydroxyphenyl) benzenesulfinate desulfinase (HPBS desulfinase) catalyzes the final step in the desulfurization pathway, the cleavage of the carbon-sulfur bond of 2-(2'-hydroxyphenyl)benzenesulfinate (HPBS) to form 2-hydroxybiphenyl and sulfite. HPBS desulfinase was purified from *Rhodococcus* strain sp. IGTS8. Efficient cell lysis was obtained using a French Press. Purification was achieved using ion-exchange chromatography and hydrophobic interaction chromatography. The purification was monitored using spectrofluorimetric and

colorimetric assays and further assessed by SDS-Polyacrylamide gel electrophoresis. An overall 20-fold increase in purification was obtained for the enzyme that was determined by SDS-PAGE to be greater than 90% pure. The K_m and V_{max} of the enzyme was measured using the substrate HPBS. Inhibition was observed in the presence of the product, 2-hydroxybiphenyl.

135.

SELECTIVE TRANSPORT OF $Pb(II)$ BY THE POLYETHER ANTIBIOTIC

IONOMYCIN. Douglas R. Pfeiffer¹, Richard W. Taylor², Clifford J. Chapman¹, and Warren L. Erdahl¹. (1) Department of Medical Biochemistry, Ohio State University, Columbus, OH 43210, (2) Department of Chemistry & Biochemistry, University of Oklahoma, Norman, OK 73019

Studies utilizing phospholipid vesicles show that ionomycin transports divalent cations with the following selectivity sequence: $Pb^{2+} > Cd^{2+}, Zn^{2+} > Mn^{2+} > Ca^{2+} > Cu^{2+} > Co^{2+} > Ni^{2+}, Sr^{2+}$. Using individual transport rates for Pb^{2+} and Ca^{2+} , a selectivity factor, $S_{Pb/Ca}$, of 450 is calculated. This rises to ~3,200 when both cations are present and transported simultaneously. 1 μM Pb^{2+} inhibits the transport of 1 mM Ca^{2+} by ~50%, whereas the rate of Pb^{2+} transport approaches a maximum at a concentration of 10 μM Pb^{2+} , when 1 mM Ca^{2+} is also present. The concentration dependence of Pb^{2+} transport indicates that the primary transporting species has 1:1 Pb^{2+} - ionophore stoichiometry. The species transporting Pb^{2+} may include $HI-Pb-OH$, where HI represents singly ionized ionomycin and the coordinated OH^- maintains charge neutrality. Studies using A20 B lymphoma cells show that ionomycin catalyzes both Pb^{2+} influx and efflux, with concentration behavior similar to that found for the phospholipid vesicles.

136.

STRUCTURE-ACTIVITY RELATIONSHIPS IN ANTINEOPLASTIC TYPE I

AMPHIPHILES. M.K. Dymond and G.S. Atford. Department of Chemistry, Southampton University, University Road, Highfield, Southampton, SO17 1BJ, England, mkd1@soton.ac.uk

HDPC and ET-18-OMe, both type I amphiphiles and analogues of the naturally occurring biomembrane component lysophosphatidyl choline, are potent anti-neoplastic agents. A series of novel, type I amphiphiles have been synthesized and their cytostatic activity against cancer cells in culture was determined. The data suggest that cytostatic activity is a generic property of type I amphiphiles. Furthermore the primary target for these amphiphiles appears to be the inhibition of phosphatidylcholine synthesis via perturbation in the elastic properties of intracellular bilayer membranes.

137.

SULFATE RELEASE FROM 2-DIISOPROPYLAMINOETHYLSULFONIC ACID, A DERIVATIVE OF THE NERVE AGENT VX, BY TAURINE-UTILIZING BACTERIA.

Amber Elise Sehrank and Michael P. Labare. Chemistry, United States Military Academy, P.O. Box 1759, West Point, NY 10997, x02074@xmail.usma.edu

The United States is searching for an environmentally safe way to dispose of the nerve agent VX. O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothiolate. VX can be transformed to 2-diisopropylaminoethylsulfonic acid (pSA) by sequential treatment with water and performic acid. Previously our laboratory has shown that pSA was biodegradable. However, the consortium proved to be phenotypically unstable. A phenotypically stable bacterial isolate capable of growing on 2-aminoethylsulfonic acid has been isolated from Hudson River sediment. A resting cell assay was developed to quantify the release of sulfate from bacterial growth on taurine. When cells (OD_{600nm}) were exposed to 5 mM taurine for 18 min, 1 hr and 24 hrs; 0.00245, 0.00442 and 0.0413 mg of SO_4^{2-} were released respectively. This assay will be used to determine if the isolate can remove the sulfate group from pSA. In addition, diethylaminoethylsulfonic acid, derived from Russian VX, will also be tested for the release of sulfate.

138.

THREADING INTERCALATORS: EFFECTS OF SIDE-CHAIN STRUCTURE ON DNA INTERACTION FOR ANTHRAQUINONES AND NAPHTHALENE DIIMIDES.

Dabney W. Dixon, Vera Steullet, and Sophia Edwards-Bennett. Department of Chemistry, Georgia State University, University Plaza, Atlanta, GA 30303, fax: 404-651-1416, ddixon@gsu.edu

Intercalators with one side chain in the minor groove and the other in the major groove are termed "threading intercalators." Topological constraints require that

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